Little Miss Strange: Online Education for Empowering Women from Under-Represented Groups

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Abstract: In many countries, opportunities for higher education are reduced for some under-represented groups in society. One such group are young women from rural and underdeveloped areas who due to traditional, patriarchal lifestyles have much less chance to go to college and get education that their peers from urban areas have much more access to. Online education opens doors for these women, but they still need support and guidance. WINnovators, a 3-year EU Erasmus+ project started in late 2021, has made steps towards providing such support and guidance. It focuses on providing online learning content in different areas of STEM/STEAM and aims at encouraging young women from rural areas to go through such content, develop their entrepreneurial skills, and possibly come up with ideas of how to start their own businesses. Of course, this vision largely contradicts traditional lifestyles. Still, it creates some chance for at least partial leveling with other groups in society. To provide guidance to these women, university students guide them in using the online learning content and taking the learning challenges that eventually lead to raising their awareness of how to break on through to the other side. The paper explains this process and illustrates it by a case study.

Keywords: Online education, Women, Under-represented groups.

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Introduction

By under-represented social groups, researchers and social workers usually mean nondominant groups such as people of color, people with disabilities, people with a lower socioeconomic status, LGBTQIA+ people, ethnic and/or religious minorities, elderly people, women, immigrants, homeless people, low-income earners, single parents, first nations / indigenous people, and the like (Drew, 2023; Hamlet, 2017). Unfortunately, such marginalized groups often have limited representation and voice in education, politics, and decision-making processes and bodies in society. This lack of representation in society has real impacts on the lives of those affected, because partial or complete exclusion of marginalized groups from conversations and decision-making processes puts them at risk for being oppressed and having policies made *about* rather than *for* them (Ezorsky, 2018). Likewise, these groups often suffer from various forms of discrimination – from taste and statistical discrimination, to institutional discrimination (which can be immaterial, but hard-hitting), to various forms of everyday interpersonal discrimination (Small & Pager, 2020). All these types of discrimination can be highly consequential, although sometimes actors do not perceive clearly that they have experienced discrimination.

The research presented in this paper focuses on a specific under-represented group: young women from largely undeveloped and usually rural areas, where traditional and often patriarchal lifestyles still prevail. Due to hard economic, financial, and social conditions, these women often stay short of opportunities for proper education. It is long known that living in a city typically offers greater access to education and wider employment opportunities (Azcona, et al., 2019). In the case of young women, it also typically means greater independence, lower fertility rates, and higher gender equity. Still, moving from rural areas to a city can be difficult for young women, because of family, financial, and other reasons.

The *WINnovators project (Boosting young women's entrepreneurial spirit and skills to become the women innovators of the future)*, funded by the EU Erasmus+ program (Project No. 2021-1-EE01-KA220-HED-000032081), concentrates on these marginalized women and develops free online courses for them to help them get informally educated and possibly start their own businesses. Preliminary studies of the project participants have shown that in many countries young women from underdeveloped areas can have great ideas of starting and running businesses, but are lacking skills and entrepreneurial approach to put these ideas to life. Note that boosting entrepreneurship among some of the targeted young women does not necessarily mean changing their lifestyles completely – online education and online entrepreneurship can be initially run as a side activity, with minimum costs and moderate effort. On the other hand, to some of them this can be a great door opener for improving their living in the future.

The next section provides more detail about the WINnovators project. The rest of the paper presents a case study of running online courses for under-represented young women. A number of these courses are developed and uploaded on a dedicated online platform, called the WINnovators platform.

The WINnovators Project

WINnovators (https://www.winnovators.eu/) is a three-year project in the area of capacity building in the digital, entrepreneurial, STEM/STEAM innovation and sustainability fields, for the benefit of young women in rural areas and outskirts regions, higher education students, and teachers. The project is conceived as a series of activities to create suitable online teaching and training materials that encourage innovation, critical thinking and problem solving using STEM/STEAM knowledge, i.e. knowledge from science (S), technology (T), engineering (E), art (A) and mathematics (M) (White, 2014). The young women it targets are envisioned to be between 19 and 29 years old and facing socio-economic difficulties in applying to get educated in high-quality educational institutions (Radenkovic et al., 2022).

The partners in the project consortium include institutions from five European countries – Estonia, Serbia, Slovenia, Romania and Italy. The project activities are designed to also involve stakeholders other than the targeted young women. These other stakeholders and their roles in the project are:

- university teachers – experts from different fields (pedagogy, social sciences, computer science, information systems, finance, marketing, management, etc.) with skills in creating online courses
- university students – predominantly female students who mentor targeted young women in their activities and help them come up with innovative, feasible, and sustainable business ideas
- education management bodies and policy makers in the partner countries – individuals and organizations responsible for advancing educational regulations to enable disadvantaged individuals to get access to high-quality education and overcome geographical, social, financial, and other obstacles on that path
- educational associations, networks, and training and research centers – organizations with large lists of contacts that provide knowledge transfer to targeted learners and encourage and incentivize the learners to develop their entrepreneurial skills
- relevant SMEs and technology transfer consultants – IT, business, and educational technology companies with trained and skilled employees that support technical, innovation, and business aspects of the project

The synergy of these stakeholders has resulted in creating:

- a new online platform – the WINnovators platform – an interactive online working space that stores all learning content for the targeted learners and enables detailed online interaction between the learners, their student mentors, and the teachers
- a gamified support for learners and their learning activities on the WINnovators platform – each successful completion of a learning activity or a challenge is awarded by an appropriate digital badge, thus increasing the learners motivation and enabling them to demonstrate their newly acquired skills to

third parties online

- an open collection of best training practices – the collection was initially created by the pedagogical experts from the project, and is regularly updated with new experiences with the actual learners
- a collection of recommended policies – these suggest valuable measures to policy makers in order to tackle the lack of opportunities for under-represented young women in terms of getting better education and starting and running their own business

Methods

In practice, the WINnovators project works with under-represented young women as follows:

- in three partner countries – Estonia, Slovenia, and Serbia – relevant project participants promote the WINnovators opportunities among targeted young women and assemble the interested ones to join the courses and work together with the project team to get educated in different STEM/STEAM topics; these country-based learning cases come in cycles, each cycle taking several months
- the learners get in touch with the WINnovators teachers and students from their respective countries and get guidance in joining and using the WINnovators platform; to do that and start taking courses and challenges from the platform, they only need Internet connection and can access the platform using their phones (the platform is optimized for phone access)
- once the learners are familiarized with the platform, they start taking courses and challenges they select from all of the courses and challenges uploaded on the WINnovators platform; each learner is assigned a student mentor as the first contact person to get in touch with whenever it's necessary
- during the learning phase, all learners are encouraged to come up with their own ideas for starting a business; examples of such ideas are starting agro-tourism on a farm, collecting and selling medicinal plants, selling specific home-made products online, providing guidance to hiking groups and nature lovers, and the like
- those who don't come up with their own ideas for starting a business or an innovative activity get help from their mentoring students and teachers in one or more brainstorming, motivating online sessions
- student mentors track all of their students' activities online and through direct interaction with them, thus collecting data about all relevant activities in each cycle
- student mentors and teachers award appropriate badges to learners as tokens of recognition for their learning attainments
- in the end of the cycle, the project team analyzes the data collected during the cycle activities and spots weak points and makes improvements for the next cycle accordingly

In the last phase of the project, the accumulated collection of best training practices and the collection of recommendations to education policy makers will be presented to policy-maker representatives from each of the WINnovators partner countries. This event will include representatives of all types of the WINnovators project

stakeholders (see the previous section). The project dissemination among policy-makers in each partner country, in social media, and through numerous other dissemination activities is a continuous activity, running from the very beginning of the project. In addition, demographic expertise and different women associations are consulted and deployed whenever necessary in order to target potential learners in the best possible way (the results of this process are explained in the next section).

At the time of writing this paper, the first cycle of working with groups of under-represented young women – the targeted learners – is ongoing. The approach to building teams (learners + student mentors) slightly differs from one partner country to another, but in general all learners have their student mentors to guide them through the process. There are country-based weekly online meetings for all the learners, the student mentors, and the teachers, to discuss the learners progress, to enable the learners to reflect on their own progress relevant to that of the other learners, and to share experiences.

Who Is Little Miss Strange, Actually?

Research shows a great statistical variety when it comes to women running their own businesses. To an extent, this is due to the level of development of the country and/or geographic region where the statistics are taken. For example, 42% of all businesses in the USA are owned by women (33% in Europe), and, somewhat paradoxically, less-populated cities and states have more women-owned businesses that are successful in terms of revenue and employment (Dorn, 2023).

Most women business owners there are Gen X women (born between 1965 and 1980), about 69% of all female business owners, followed by boomers (born between 1946 and 1964), about 19%. In Latin America and the Caribbean, 50% of SMEs have at least one woman as one of their principal owners, but only 23% so in The Middle East and North Africa, and only 18% in South Asia. For example, among rural small business owners in India, only 8% are women, although there are 38% women solopreneurs in rural areas there (Naseer, 2022); women solopreneurs refer to individual women running their home-based, non-farm business.

Also, most of these women entrepreneurs in India (58%) were in the age range of 20-30 when they first started out. Their businesses are typically necessity-driven, rather than innovation-driven (which also holds for some African countries, e.g. Egypt and Angola). However, another recent study, also from Africa (Burundi) shows that women entrepreneurs often engage in their businesses out of self-satisfaction, not out of necessities like family and/or social crisis, are typically self-funded (e.g. from livestock ownership), and that their businesses bring life improvement to 75% of such women (Kabagerayo et al., 2022).

What is the situation to this end in Serbia? The WINnovators case study presented in the rest of the paper refers to education of young women from rural areas and outskirts regions in Serbia, thus it is of interest to have at least a big picture about the situation there. Note that the data from the recent census (2022) are still not publicly

available, hence statistics are incomplete.

Still, it is known among demographers that rural settlements in Serbia are characterized by intensive depopulation due to emigration and negative natural growth, resulting in an advanced demographic age. The median age of the population of Serbia is now 43.8 years, 45.2 for women (from the yet unpublished data from the latest census). Out of all women living in rural and outskirt areas, only about 10% are in the age group 20-30, which is about the relevant age group for the WINnovators project.

An earlier study (Babovic, 2012) has identified that the vast majority of women entrepreneurs lived in urban settlements (82.2%), that trade was their dominating industry (46.8%), that only about 12.7% of them belonged to the age group 19-29, and that about 66% of them had degrees only from secondary education establishments. An encouraging figure from that study indicates that 38.2% of women entrepreneurs had started their businesses after coming up with a promising business idea they wanted to pursue, and an additional 20% of them wanted to take on new challenges. However, 58% of their initiatives have been necessity-driven, rather than innovation-driven. More than 75% of women entrepreneurs from that study have declared that they had consultancy and guidance only from family members and friends. 43.2% of these women thought that further education was essential for their businesses, and an additional 35.5% thought that it was important, although not essential. A vast majority of them (72.3%) have never taken any additional course.

Interestingly, the same authors have repeated their study ten years later (Babovic & Stevic, 2023). Key findings from this new study indicate that there are many "new" women entrepreneurs in Serbia (those who have started their businesses during the last decade). Their profile has changed to an extent over the 10-year period – they are on average 4-5 years older (46.3 years) than in the first study (41.9 years), there are much less of them in the age group 19-29 (only 4.5%, as opposed to the 12.7% in the first study), and they are much less in the trade sector than before (24.2%) although it is still their dominating sector. However, most of them still run micro businesses in urban areas. Likewise, women entrepreneurs do not show interest in additional education and training, and only a small proportion of them innovate and report that innovation has proven to be the key to success.

Recent statistics confirm stereotypes about women in Serbia: they work in the household twice as much as men, regardless of whether they are employed or not (SORS, 2020). This unpaid work is referred to as "the second shift" for women. There are slightly more than 30% of women, typically self-employed, who work in agriculture and for whom it is reasonable to assume that they live in rural areas. The proportion of self-employed women who work in services in Serbia is much higher, about 65%. Recent data about the exact entrepreneurial activities of women in Serbia are still incomplete and imprecise; the proportions are expected to be different with regard to those from the previous census (2011), but until they become officially available one can only assume the exact figures.

So, where do the WINnovators project participants find the targeted under-represented young women to offer

them free educational services through the WINnovators platform? The metaphor from the paper title and from the title of this section, Little Miss Strange, is not a coincidence. There are very few marginalized young women in rural, depopulated areas, who would simultaneously take an educational journey on the WINnovators platform. Even if they did, it might be considered strange in their local communities, given the hardship of living the life they do, with very little time for anything else but the family, household, and other duties.

In reality, many young rural women all over the world increasingly move or have already moved to urban areas, often together with their families. True, in underdeveloped countries they are often still denied the same educational benefits and opportunities that cities offer to men, especially if they can only afford living in urban slums (Azcona, et al., 2019). Yet, the "urban calling" there echoes a little stronger. The WINnovators participants from Serbia have managed to find some of their Little Miss Strange women in these communities. Another group has been identified in rural settlements close to larger cities, where there are young women who do not want to emigrate to cities. Thus contrary to the initial vision of the WINnovators participants from Serbia, the demographic reality has indicated that the targeted learners do not have to be reduced only to villages with scarce demographic potential, but also to peripheric smaller urban settlements.

Results

A necessary prerequisite for all learning activities in the WINnovators project was to develop the WINnovators platform first. The platform has been developed and tested by the project participants during the first year of the project activities. All learning materials are uploaded there and much of the interaction between the project stakeholders run through the platform.

Two cycles of learning activities with different groups of under-represented young women have been envisioned in the project: the pilot cycle, and the first regular cycle. The pilot cycle has been envisioned much as a regular cycle, with an additional objective of getting a feeling how everything will work in practice, with learners of different backgrounds. At the time of writing this paper, the pilot cycle is still ongoing.

All technical and practical deficiencies and weaknesses spotted during the pilot cycle have to be reported and analyzed by the project team and eliminated or at least mitigated before the first regular cycle. After the end of the project, the WINnovators partners intend to continue with running regular cycles periodically.

The WINnovators Platform

When a user logs on to the WINnovators platform, their personalized starting page looks as the one shown in Figure 1. The Teams tab takes the user to the list of teams of learners and students that work together on the platform, Figure 2. All teachers, learners, and student members can check out all ongoing activities in all teams, Figure 3.

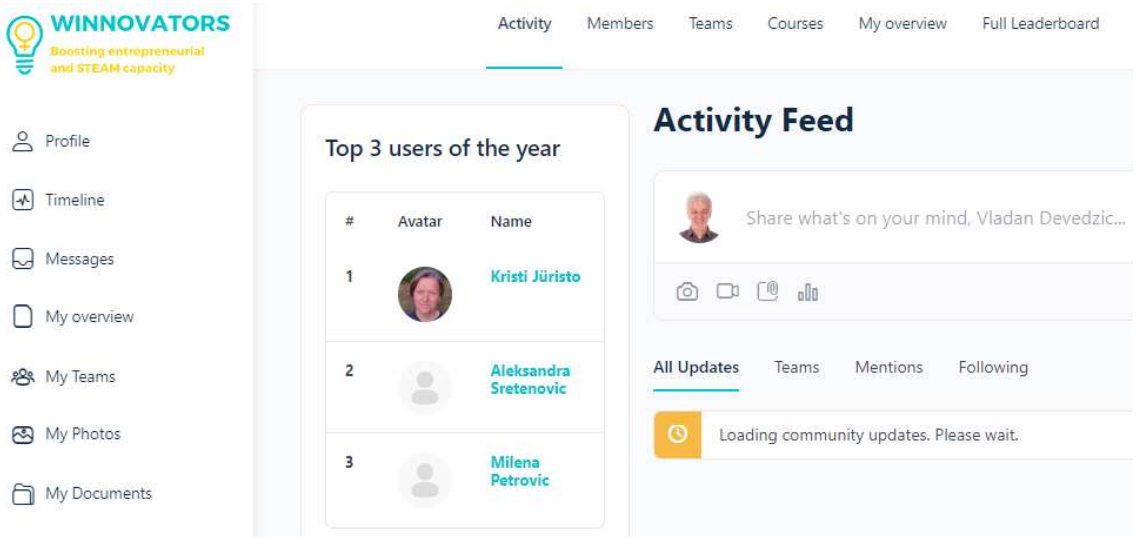

Figure 1. Part of the Home Page of the WINnovators Platform (Personalized for a Specific User)

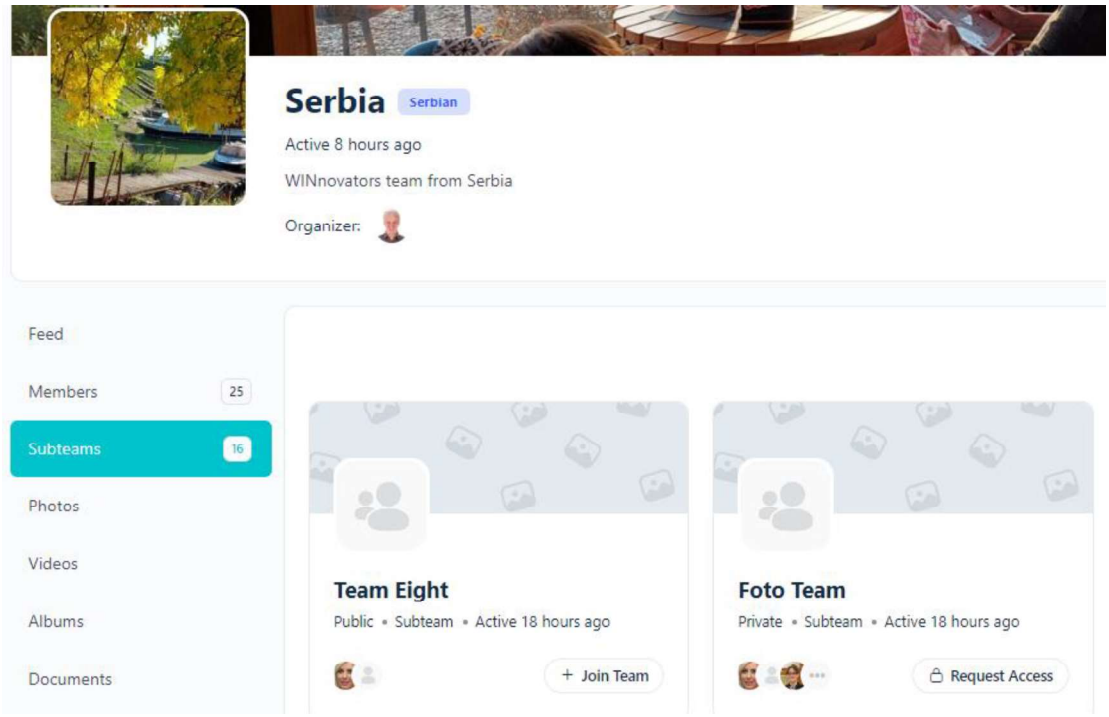

Figure 2. Some of the Teams working on the WINnovators Platform

The Courses

The Courses tab shows *groups* of courses (modules) for learners to select from, Figure 4. There are General Learning Resources, aka beginner-level courses to take first, Figure 5 (left). They will prepare the learners for advanced-level courses, or Challenges Figure 5 (right). A notable difference between the General Resources and

Challenges is that Challenges assume that the learner will *develop* and/or *create* something in order to complete the course, whereas the assessment activities pertaining to the courses in the General Resources category are not that demanding. Note that Figure 5 shows only part of the courses for learners to select from; in reality there are 19 courses in the General Resources category, and 7 courses in the Challenges category. There is no restriction in terms of how many courses a learner can take and in what order, since all of their activities are monitored by their respective student mentors and all their attainments are awarded by specific badges.

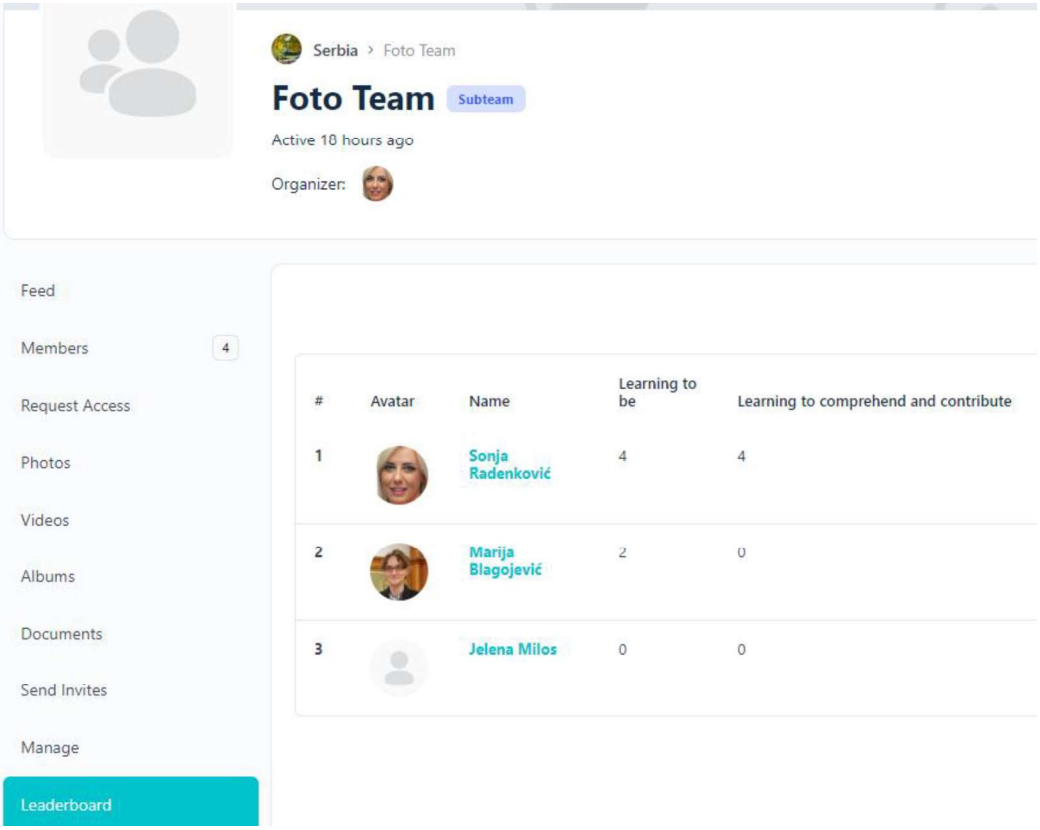

Figure 3. A Specific Team

All courses are organized in suitable multimedia lessons, Figures 6 and 7, followed by exercises and assessments. The learners can always ask their student mentors for guidance during their learning. However, they are expected to complete the assignments on their own.

The pilot cycle

The pilot cycle in Serbia has started with 18 teams – 18 young women and their 18 student mentors. Each young woman has got her mentor, and the teachers from the Serbian team have taken the coordinating roles. Over time, 3 young women have dropped out. The remaining 15 teams have continued to work and the teachers have organized weekly 1-hour online meetings with all the teams to share ideas and report difficulties with using the

platform. These online meetings have proven to be useful both for the learners and their mentors, as well as for the project team members who get familiarized with real-world situations that arise during the process and can then start actions to improve the platform, the courses, the interactions, and the overall process.

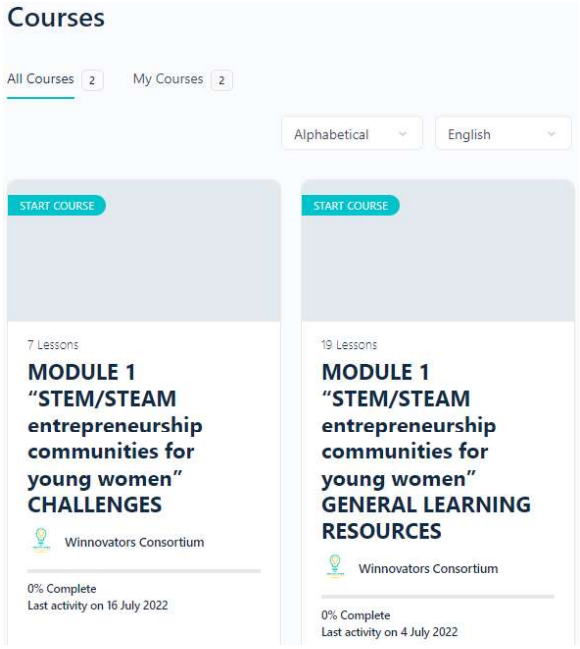

Figure 4. Groups of Courses on the WINnovators platform

Figure 5. Some of the WINnovators Courses – General Resources (Left) and Challenges (Right)

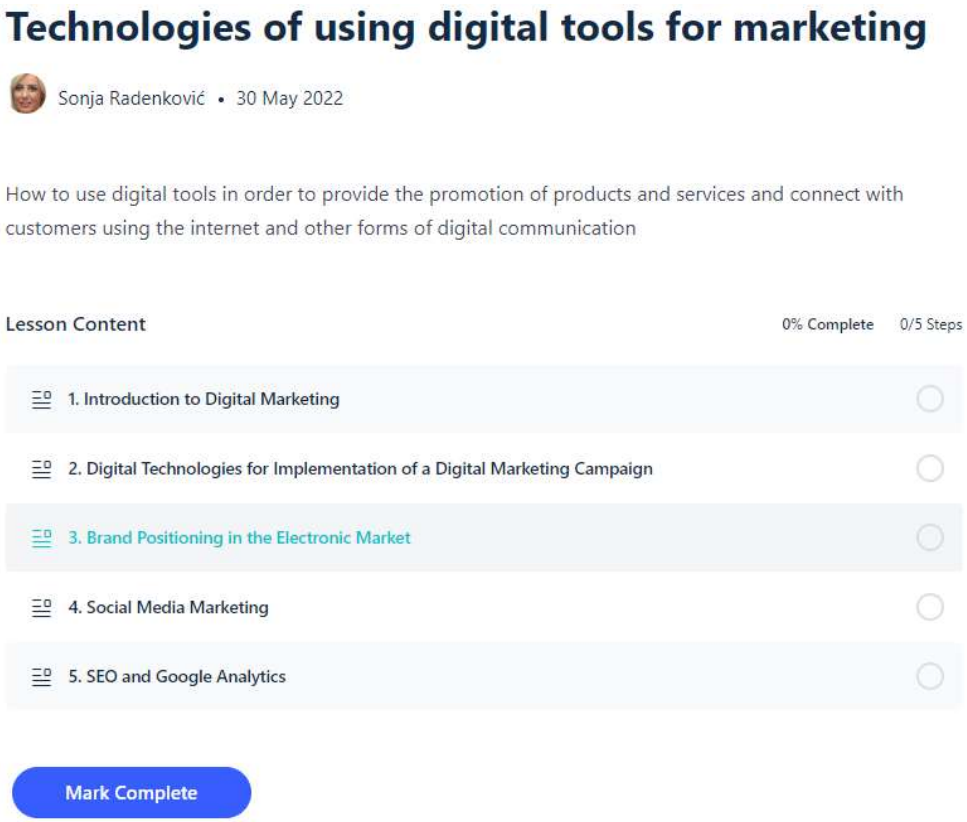

Figure 6. A Lesson from the *Technologies of Using Digital Tools for Marketing* Course

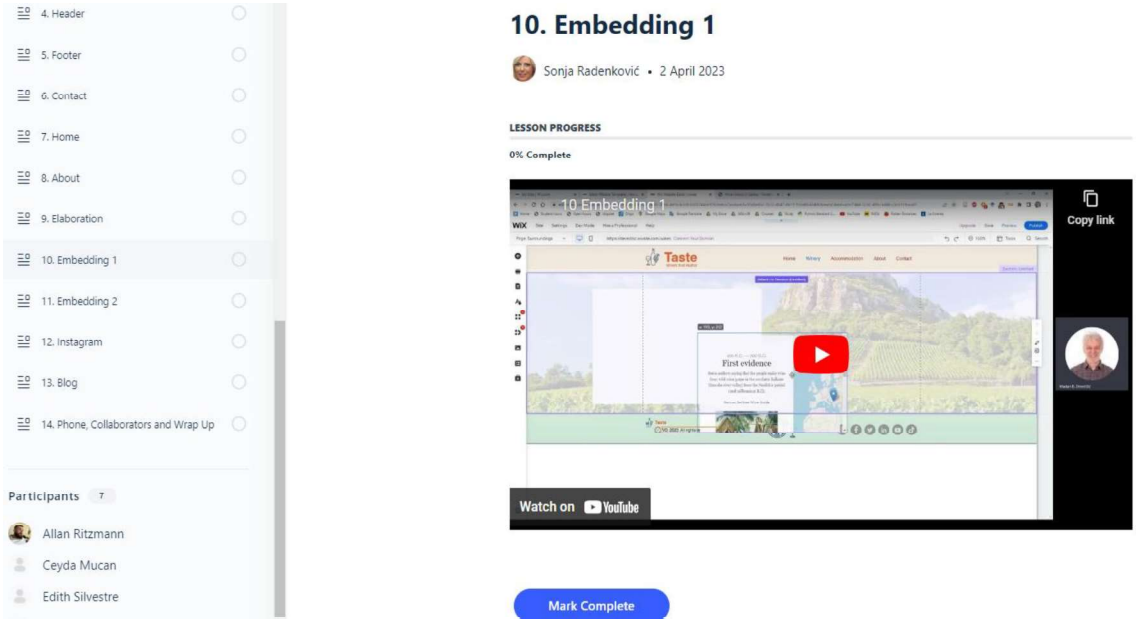

Figure 7. A Lesson from the *Introduction to Web Development* Course

See (Blagojevic et al., 2023) for more details about the courses on the WINnovators platform.

Several useful observations have been made since the beginning of the pilot cycle:

- There is a great variety in the ideas that the teams are developing. Examples include wool processing, collecting and selling medicinal plants, caretaking about elderly people, catering, guiding hiking tours, landscape photography, holistic massage, gardening, craft beer brewery, culinary business, etc.

- The most popular course from the General Learning Resource group is *From idea to business*. The major objective of this course is to learn how to efficiently create the business plan for implementing a business idea and putting it to life. Many learners have already come up with drafts of their business plans. Their mentors and teachers are helping them and encouraging them to complete the plans.
- Most teams work in small steps and do not rush to jump to more advanced topics. Half the way through the cycle, no challenges have been attempted by the teams yet.

- Initial explanations have been necessary. Upon successful registration on the WINnovators platform, the learners have seen a number of courses and have reported that many of them looked appealing and that they were ready to take more than one. Still, in what order to take them? Obviously, the optimal order may be different for different learners, depending on their prior knowledge, their interests, and their ambitions. Thus the student mentors and the teachers have suggested to them what the optimal learning path might be in each specific case.

- The effort the learners put in the learning process varies, depending on their specific private situation, prior education level, and learning objectives. This has resulted in variations in the learning pace from the very beginning. For example, while some of the learners are making slow progress through the learning materials and do not communicate with their student mentors frequently, others have already completed more than one course and have elaborated their business ideas to the point that they plan to apply for funding with different funding agencies to start up their business.

Discussion and the Lessons Learned (So Far)

It is important to understand that the process of attracting young marginalized women to join the WINnovators process and take courses is not always smooth. When the project contacts them, their reactions are different. Some accept the offer immediately, as soon as they learn that the courses are free. Others are reluctant and hesitate joining the teams. The best practice so far has been to approach them through personal contacts ("A friend of a friend").

The same goes for students (mentors). The initial vision of altruistic students who want to help just like that has dissolved quickly. It took some time for the project team to realize that many students have a different idea in mind – "What's in there for me?" The reason is that they are either too busy with their regular duties at the

university, or they simply want to keep their time for themselves. The solution to this problem has been found in selecting the students through personal contacts (again), in offering them to join in order to start and run their own small research projects (this has attracted some students of social sciences, especially PhD students), and in arranging with the university management for these students to complete their mandatory internship and earn credits for their work in teams with young women.

Several young women who have joined the pilot cycle obviously did have some vague business ideas already, but have typically lacked experience and skills to put them to life. They have welcomed the idea of having mentors with whom they can further develop their own innovative business approaches, since in their local communities they did not have skilled partners to engage with them in articulating and accelerating their ideas.

An interesting finding from the pilot cycle is that having children did not seem to be a constraint for young women in their ambition to start their own business. Contrary to the popular belief that under-represented young women with children lack interest in getting proper training and that they focus on their family duties only, several young women from the pilot study have completely different mindsets. Possible constraints that they experience in their local communities are of different nature (financial, lack of opportunities, and the like), but their readiness to start and run a business alongside of raising children is evident.

Conclusions

The WINnovators project tries to increase opportunities for under-representing young women to gain new experience and knowledge, as well as to test their own business capacity. Grasping new opportunities for self-accomplishment outside of narrow local mindsets and conservative lifestyles, critically assessing processes of change in the society, and building sustainable alternative futures through improving their own lives is seen as an important move in the lives of these women.

To this end, the project offers online training opportunities for marginalized young women, in several STEM/STEAM fields, with the common objective of giving them a better starting point and incentives to start up and run their own business. The case study presented in the paper – the one related to the ongoing pilot study in Serbia – shows that in spite of initial difficulties such opportunities are welcome among such women. They are ready to put effort in getting an appropriate training and at least partially compensate for the lack of educational opportunities that their luckier peers have when they live in different local communities.

However, to sustain the process of training these young women in the long run (beyond the pilot cycle) it is important to have a clear idea of the demographic picture in the country/region where the training is running. Depopulation is present in rural areas in many countries. Under-represented young women and their families today very often live in towns and in the outskirts of cities, where lifestyles are considerably different from those in villages. *These* young women should be targeted in the future developments of the WINnovators project

and in providing training for them after the project ends.

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